

Bot. Cab. x. no. 952. *G. pubescens*, R. Br., var. *minor*, Sims, Bot. Mag. lii. t. 2540. *G. Menziesii*, Wats. & Coult. in Gray, Man. ed. 6, 504, in part (as to Tadousac, Crawford, and New York plants), not Lindl. *Peramium Menziesii*, Morong in Britt. and Brown, Ill. Fl. i. 475, in part, not Morong Mem. Torr. Cl. v. 124. — In upland woods, rarely in bogs or deep moss, Salmonier River and Whitbourne, Newfoundland (*Robinson & Schrenk*) and Tadousac, Quebec (*G. L. Goodale*) to Lake Nipissing, Ontario (*G. S. Miller, jr.*), south to Hartford, Connecticut (*H. S. Clark*), Catskill Mts., New York (*Geo. Thurber*) and Seneca Co., New York (*Asa Gray*). The commonest species in northern New England, flowering in August.

*** Spike 1-sided rather densely flowered: lip scarcely saccate, elongated, with the margin involute.

G. MENZIESII, Lindl. Stem rather stout, 3.5 dm. high (sometimes 4.5 dm.), often producing stout stolons: leaves firm, .5 to 1 dm. long, plain green, often with broad, white midribs, or rarely mottled with dark and light green: spike, during anthesis, about 1 dm. long (occasionally 1.5 dm.): perianth 8 or 9 mm. long: anther ovate, long-acuminate: slender beak longer than the body of the stigma. — Gen. et Sp. Orch. 492; Brew. & Wats. Bot. Cal. ii. 136; Wats. & Coult. in Gray, Man. ed. 6, 504, in part. *Spiranthes decipiens*, Hook. Fl. Bor.-Am. ii. 203, t. 204. *Orchiodes Menziesii*, O. K. Rev. Gen. ii. 675. *Peramium Menziesii*, Morong, Mem. Torr. Cl. v. 124, and in Britt. & Brown, Ill. Fl. i. 475, in part. — In dry woods, flowering in August, Mt. Albert, Gaspé Co., Quebec (*J. A. Allen*); Squaw Cap Mt., Restigouche, New Brunswick (*G. U. Hay*); Frenchville, Aroostook Co., Maine (*Kate Furbish*); Allaguash, Aroostook Co., Maine (*M. L. Fernald*); on the Great Lakes, from Lake Huron westward (*Goldie, Robbins*, et al.); Rocky Mountains, from British Columbia to Arizona; also California and northward.

EXPLANATION OF PLATE I. — *Goodyera Menziesii*: fig. 1, flower; fig. 2, lip; fig. 3, column from side; fig. 4, column from front; fig. 5, column from back. *G. tessellata*: fig. 6, flower; fig. 7, lip; fig. 8, column from front; fig. 9, column from side. *G. repens*: fig. 10, flower; fig. 11, lip; fig. 12, stigma from front; fig. 13, column from back; fig. 14, column from side.

THE SANICULAS OF WESTERN VERMONT.

EZRA BRAINERD.

THE four species of *Sanicula*, as set forth by Mr. Bicknell in the Bulletin of the Torrey Bot. Club for August, 1895, occur not infrequently in western Vermont. A few notes are herewith presented, the result of frequent observation of the growing plants during the past summer.

The four forms are well marked, and are undoubtedly good species. Indeed, it is surprising that a plant so distinct in appearance as *S. gregaria*, both in the flowering and fruiting stages, and so widely distributed, as it seems to be in the east, should have so long failed of recognition as a species. A peculiarity of this species, not before reported, is that some of the plants bear small black tubers attached to the main root or to its fibres an inch or two from the base. This may have something to do with the gregarious habit of the species. The two species most likely to be confused, especially at the period of flowering, are *S. Canadensis* and *S. trifoliata*. The number of the leaflets is not a safe guide; for the upper leaves of *S. Canadensis* are trifoliolate, and the lower leaves of *S. trifoliata* have the outer segments parted as in *S. Canadensis*. However, the leaflets of *S. trifoliata* are broader and more coarsely serrate, the branches more remote on the stem, the stem more flexuous, the fruit-bearing rays longer, the time of flowering a week earlier, and (best test of all) the pedicels of the staminate flowers are fully twice as long. In luxuriant plants of *S. trifoliata* there is not only a branch from the axil of every stem-leaf, but one or more from the base of the stem, so that the plant is broad and bushy. When in fruit, the two species may be distinguished at a glance.

It should be noted that these two species have not only short styles, but also correspondingly short stamens — hardly at all exerted — and short petals, about half the length of the calyx-lobes. The flowers are thus inconspicuous. The long-styled species, on the contrary, with their numerous staminate flowers, long filaments, and bright colored anthers, produce a marked floral effect.

Each species continues in flower for a week or ten days. The dates at which flowering commenced the past summer were as follows: —

<i>Sanicula Marylandica</i> , L.,	June 1
“ <i>gregaria</i> , Bicknell,	“ 1
“ <i>trifoliata</i> , Bicknell,	“ 20
“ <i>Canadensis</i> , L.,	“ 27

The fruit of the long-styled species was mature by the middle of August. That of *S. Canadensis* ripened a week or two later; while the carpels of *S. trifoliata* were green until September.

By far the most common species in western Vermont is *S. Marylandica*. It is the species of widest geographical range; I collected it in August, 1897, along the Columbia River at Revelstoke, B. C. It ascends, also, to a higher altitude than any of the other eastern spe-

cies. I find it as high as 1,500 ft. in the Green Mountains ; the others never above 500 ft. In the mountains it grows in boggy thickets ; but at lower levels in dry or moist, but not wet, woodlands.

The other species are far more exacting in their requirements as to soil, moisture and shade. *S. gregaria* grows in quite moist, heavy soil, rich with leaf-mould, where one would look for *Phegopteris hexagonoptera* or *Asplenium angustifolium*. It affects the banks of small brooks in flat woodlands. *S. trifoliata* also requires moisture, and is often found growing with *S. gregaria* ; but it also occurs on banks of gravel or till, along the base of the mountains. *S. Canadensis* is found along shaded ledges in a drier situation than that required by the other species ; but in two localities I have seen it growing with *S. trifoliata*.

The fruiting characters of the four species are fully and admirably described by Mr. Bicknell in the article above cited.

MIDDLEBURY COLLEGE.

NOTES ON ALGAE.— I.

F. S. COLLINS.

IN this series of articles the writer hopes to publish, from time to time, such additions to the New England Algae as may come to his notice, as well as items of interest in regard to species already known to exist here. The present paper adds two species new to America ; the type of one species hitherto represented only by a variety ; and one species believed to be undescribed.

The first addition to the American flora, *Cylindrospermum catenatum* Ralfs, is distinguished from other species of the genus by having the spores in series, sometimes as many as fifteen adjoining ; while all others have the spores scattered singly through the filament. It occurred on moist ground in Middlesex Fells, Mass., by the shores of Spot Pond, in August and September, 1898, the spores reaching maturity the last of September. It formed a dark, thin coating on the ground, looking as if a little black paint had been spilled and dried.

The past summer was a very favorable one in this vicinity for algae of this kind ; the weather was extremely hot in July and August all over the country ; but while there was almost a drought in many sections, as in New York State and in Maine, on opposite sides of this region, in the vicinity of Boston there were frequent rains, so that even